

IN THE CLAIMS

The following claim listing replaces all prior listings and versions of the claims:

A Complete Listing of the Claims:

1. (Currently Amended) A die, comprising:

a die body including a die hole configured to punch a work, the die body being configured to be inserted into a die mounting hole; and

a core provided within the die body, the core comprising a discharge hole which is in communication with the die hole, wherein

the core is provided with a plurality of fluid injection ports configured to obliquely inject fluid downwardly of the discharge hole, and

the die body is provided with an inflow port through which compressed fluid flows into the fluid injection ports, wherein

the inflow port is positioned above an outlet of the fluid injection ports with respect to a vertically extending direction of the die body, and wherein

a longitudinally extending outer surface of the core abuts a longitudinally extending inner surface of the die body.

2. (Previously Presented) The die according to claim 1, wherein

the core comprises a resin, and

the discharge hole is tapered toward its upper side.

3. (Original) The die according to claim 1, wherein

an outer peripheral surface of the die body is formed with a peripheral groove which is in communication with the inflow port.

4. (Currently Amended) A die apparatus, comprising:

a die body comprising a die hole configured to punch a work; and

a die holder formed with a die mounting hole configured to detachably hold the die body, wherein

the die body is provided with a negative pressure generator which draws a punching punched out by the die hole,

the die body is provided with an inflow port through which compressed fluid flows into the negative pressure generator,

the die mounting hole is provided with a seal member at an upper portion and a lower portion which prevents the compressed fluid from leaking, wherein

the seal member is positioned within a recess surrounding the upper and the lower portion of the die mounting hole, and

the die holder is provided with a fluid supply hole through which the compressed fluid is supplied to the inflow port, and wherein

a longitudinally extending outer surface of a core provided within the die body abuts a longitudinally extending inner surface of the die body.

5. (Canceled)

6. (Currently Amended) A die, comprising:

a die body provided at an upper portion with a die hole;
a discharge hole formed in the die body, the discharge hole comprising a diameter larger than a diameter of the die hole;
an inclined surface formed at an outer peripheral surface of the die body;
an inclined air injection hole, wherein an upper end of the inclined air injection hole opens in the inclined surface and a lower end of the inclined air injection hole opens into a lower portion of the discharge hole so as to inject air downwardly in the discharge hole; and
an inflow port configured to introduce compressed fluid into the inclined air injection hole, wherein the inflow port is positioned above an outlet of the air injection hole with respect to a vertically extending direction of the die body, and
wherein the inclined air injection hole is inclined so that an axis of the inclined air injection hole intersects the inclined surface at substantially a right angle, and wherein
a longitudinally extending outer surface of a core provided within the die body abuts a longitudinally extending inner surface of the die body.

7. (Previously Presented) The die according to claim 6, further comprising:

a peripheral groove formed in an outer peripheral surface of the die body.

8. (Previously Presented) The die according to claim 6, wherein

the inclined surface is formed on an outer peripheral surface of the die body by countersinking processing.

9. (Currently Amended) A die, comprising:

a die body provided at an upper portion with a die hole; and

a discharge hole formed in the die body, the discharge hole comprising a diameter larger than a diameter of the die hole, wherein

the die body is formed with a through hole which is in communication with the discharge hole and an outer piece is fitted into the through hole, and

the outer piece is formed with an inclined air injection hole configured to inject air downwardly of the discharge hole, wherein

an inflow port, configured to introduce compressed fluid into the inclined air injection hole, is positioned above an outlet of the air injection hole with respect to a vertically extending direction of the die body, and wherein

a longitudinally extending outer surface of a core provided within the die body abuts a longitudinally extending inner surface of the die body.

10. (Currently Amended) A die, comprising:

a die body provided at an upper portion with a die hole; and

a discharge hole formed in the die body, the discharge hole comprising a diameter larger than a diameter of the die hole, wherein

an inner peripheral surface of the die body is provided with a hole-forming tool engaging section, and

the hole-forming tool engaging section is formed with an inclined air injection hole configured to inject air downwardly of the discharge hole, wherein

an inflow port, configured to introduce compressed fluid into the inclined air injection hole, is positioned above an outlet of the air injection hole with respect to a vertically extending direction of the die body, and wherein

a longitudinally extending outer surface of a core provided within the die body abuts a longitudinally extending inner surface of the die body.

11. (Original) The die according to claim 10, wherein

the hole-forming tool engaging section is a portion of an inner peripheral groove formed in an inner peripheral surface of the die body, or a countersunk portion, or a tapered surface.

12. (Original) The die according to claim 10, wherein

the air injection hole is connected to a communication hole formed from an outer peripheral surface of the die body.

13. (Currently Amended) A die, comprising:

a die body provided at an upper portion with a die hole configured to punch a work, a lower portion of the die body being formed with a discharge hole which is in communication with the die hole, the die body being configured to be inserted into a die mounting hole;

an annular peripheral groove provided around an outer periphery of the die body; and

a plurality of fluid injection ports provided in the die body, the fluid injection ports being inclined to obliquely inject fluid downwardly of the discharge hole, wherein

each of the fluid injection ports comprises a conduit which passes through the peripheral groove to the discharge hole,

a cross-sectional area of the fluid injection ports being smaller than a cross-sectional area of the annular peripheral groove, and

the die mounting hole being provided with a seal member at its upper portion and its lower portion that prevents the fluid from leaking, wherein

the seal member is positioned within a recess surrounding the upper and the lower portion of the die mounting hole, and wherein

a longitudinally extending outer surface of a core provided within the die body abuts a longitudinally extending inner surface of the die body.

14. (Currently Amended) A die apparatus, comprising:

a die body provided at an upper portion with a die hole configured to punch a work, a lower portion of the die body being formed with a discharge hole which is in communication with the die hole;

a die holder formed with a die mounting hole configured to detachably hold the die body;

a fluid supply hole formed in the die holder and configured to supply compressed fluid toward the die body; and

a plurality of fluid injection ports provided in the die body, the fluid injection ports obliquely injecting compressed fluid supplied from the fluid supply hole downwardly of the discharge hole, wherein

a cross-sectional area of the fluid injection ports is smaller than a cross-sectional area of the fluid supply hole formed in the die holder, and

the die mounting hole being provided with a seal member at its upper portion and its lower portion that prevents the compressed fluid from leaking, wherein

the seal member is positioned within a recess surrounding the upper and the lower portion of the die mounting hole, and wherein

a longitudinally extending outer surface of a core provided within the die body abuts a longitudinally extending inner surface of the die body.

15. (Currently Amended) A die, comprising:

a die body including a die hole configured to punch a work, the die body being configured to be inserted into a die mounting hole; and

a core provided in the die body, the core comprising a discharge hole which is in communication with the die hole, wherein

the core is provided with a plurality of fluid injection ports configured to obliquely inject fluid downwardly of the discharge hole,

the die body is provided with an inflow port through which compressed fluid flows into the fluid injection ports,

a cross-sectional area of the fluid injection ports being smaller than a cross-sectional area of the inflow port provided in the die body, and

the die mounting hole being provided with a seal member at its upper portion and its lower portion that prevents the compressed fluid from leaking wherein,

the seal member is positioned within a recess surrounding the upper and the lower portion of the die mounting hole, and wherein

a longitudinally extending outer surface of the core abuts a longitudinally extending inner surface of the die body.

16. (Currently Amended) A die, comprising:

a die body provided at an upper portion with a die hole configured to punch a work, a lower portion of the die body being formed with a discharge hole which is in communication with the die hole, the die body being configured to be inserted into a die mounting hole; and

a plurality of fluid injection ports provided in the die body, the plurality of fluid injection ports inclining to obliquely inject compressed fluid supplied toward the die body downward of the discharge hole, wherein

a cross-sectional area of the fluid injection ports is smaller than a cross-sectional area of a fluid supply port, and

the die mounting hole being provided with a seal member at its upper portion and its lower portion that prevents the compressed fluid from leaking wherein,

the seal member is positioned within a recess surrounding the upper and the lower portion of the die mounting hole, and wherein

a longitudinally extending outer surface of a core provided within the die body abuts a longitudinally extending inner surface of the die body.

17. (Currently Amended) A die, comprising:

a die body provided at an upper portion with a die hole configured to punch a work, a lower portion of the die body being formed with a discharge hole which is in communication with the die hole, the die body being configured to be inserted into a die mounting hole; and

a plurality of fluid injection ports provided in the die body, the plurality of fluid injection ports being inclined to obliquely inject compressed fluid supplied toward the die body downwardly of the discharge hole, wherein

a cross-sectional area of the fluid injection ports is smaller than a cross-sectional area of a fluid supply port formed in the die holder which detachably holds the die body, in order to supply the compressed fluid toward the die body, and

the die mounting hole being provided with a seal member at its upper portion and its lower portion that prevents the compressed fluid from leaking, wherein

the seal member is positioned within a recess surrounding the upper and the lower portion of the die mounting hole, and wherein

a longitudinally extending outer surface of a core provided within the die body abuts a longitudinally extending inner surface of the die body.